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ABSTRACT

The barriers to physical mobility of the elderly are explained in this study which concentrated on spatial-temporal accessibility, and the use of mass transit to urban services and resources. The first area of concern dealt with the amount and extent of free time available to the elderly who are perceived as having large blocks of descretionary time available to pursue chosen activities. An attempt was made to determine if this discretionary time was affected by having to match schedules with the transit system. The second area of concern identified the constraints of physical capability, time, and authority on the elderly. To explore these questions, five mobile, elderly, female non-drivers from Denver and Boulder, Colorado, were selected to give accounts of their use of the mass transit system. Study participants identified several difficulties that impeded the productive use of their free time. An Examination of access to two senior citizen community centers revealed that the elderly participants could not join in many activities because of transportation problems. These non-drivers lacked flexibility in scheduling their leisure time, partially because of the constraints of the aging process, and partially because of the need to rely on a inflexible transportation system. (Author/APM)

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TRANSPORTATION ACCESSIBILITY AND QUALITY OF LIFE FOR THE URBAN ELDERLY

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TRANSPORTATION ACCESSIBILITY AND QUALITY OF LIFE FOR THE URBAN ELDERLY

An individual's life space is that part of the environment he or she occupies physically, socially, and psychologically (Birren, 1969). The arrangement of the urban lifespace of an elderly person should promote ease of access to services and amenities designed for the general public, as well as those designed specifically for the elderly. However, many elderly people cannot organize and cope with spatially separated services because of reduced mobility caused by lack of access to an automobile. Therefore, the need for good public transportation services is particularly important because it facilitates the elderly person's search for substitutes for losses of work role, old friends, mates and status in the community. Mass transit offers a combination of greater spatial range (and subsequent spatial access to more urban services and facilities) and greater personal independence than walking or riding as a passenger in a taxi or private auto. It can be predicted that subsequent generations of elderly with higher expectations of greater mobility will demand greater spatial access to urban resources, including provision of public mass transit.

Using Hagerstrand's time-geographic framework, this study explored the barriers to physical mobility of the elderly, concentrating on the spatial-temporal accessibility, using mass transit, to urban services and resources. Two areas of concern were considered. The first deals with the amount of free time available to the elderly who are perceived as having large blocks of descretionary time available to pursue chosen activities. The extent of

free time available to the elderly who are perceived as having large blocks of descretionary time available to pursue chosen activities. The extent to which older people direct this leisure time to personally productive activities depends, to a certain extent, on level of income and on access to these activities. Are these large blocks of discretionary time significantly affected by having to match schedules with a somewhat inflexible transit system?

The second area of concern identified the capability, coupling, and authority constraints of the elderly, which are inherent in using a mass transit system. Capability constraints limit the activities of an individual through biological makeup (age, physical capability) and the tools and the technology commanded (primarily transportation modes). Coupling constraints describe the location and time duration involved in joining other individuals or objects in order to carry on production, consumption, and social activities. Authority constraints delineate restrictions placed on the individual by laws economic barriers, and power relationships observed within human social and physical interactions. Identifying these constraints defined the necessary conditions which must exist for the elderly to gain access to community resources. To identify necessary conditions, the observer must recognize reasons for "non-events," that is "to trace the barriers which prevent certain types of events . . . from happening" (Hagerstrand, 1975, p. 274). At the highest motivational level for community participation, does the non-driving retired citizen have <u>necessary</u> spatial and temporal access to community resources through use of mass transit?

To explore these questions, five mobile, elderly women non-drivers from Denver and Boulder, Colorado, were selected to give accounts of their use of the mass transit system operated by the Regional Transportation District (RTD). Although no effort was made to select people with wide ranges of activity levels and mass transit usage, a representative range of mobility

and activity levels did occur in the five scenarios. Information was collected via time-budgets and trip diaries kept by the participants. This information provided time use patterns and descriptions of the interface between the individuals and their environments. In subsequent one- to two-hour interviews, each of the women explained her experiences with the RTD system. A pattern of voiced constraints emerged from these interviews.

The time budgets revealed that the participants used an average of nine hours daily on free-time activities. Most of the free time activities (approximately seven hours) occurred at home and required no travel time. Although time budgets are useful for revealing and comparing time use, human activity or sets of activities do not occur in random order, but are preceeded and followed by other activities or sets of activities which produce time use patterns. In this study, the daily trip diaries indicated that a typical weekday pattern progressed from time set aside in the morning for personal and household chores, to late morning and early afternoon activity involving trips away from home, to passive late afternoon and evening activities at home. These time use patterns seem partially set by residual habits formed during earlier experiences and partly by particular capability, coupling, and authority constraints inherent in the elderly's use of mass transit.

During the interviews, all the participants expressed conditions which stopped them from using the bus at certain times during the day or curtailed use of RTD altogether. The participants would not ride during peak hours when ridership was near maximum and a twenty-five cent fare was levied. Also, the participants were reluctant to ride the buses with the afternoon legion of noisy, disrespectful elementary and junior high school children, even though there is no fee levied during these hours for riders over sixty-two years old. The women feared physical injury and did not want to contend with the school children's generally high activity level.

The participants considered night travel particularly forebidding and very seldom relied on bus transportation at night. Capability constraints, such as poor night vision, disorientation, fear of missing destination stops, general weariness by the end of the day, and fear of muggings and other street violence, sharply curtained attendance at night-time cultural and social events. The participants were strongly reluctant to ask friends and relatives for transportation favors and viewed taxi rides as particularly extravagent expenses.

Each of these constraints narrowed the time span available for away-from-home discretionary activities. The usual daily trip pattern began after 8:00 a.m., avoiding the rush hour ridership. The afternoon return trip home began before 2:00 p.m. (avoiding the 2:30 school dismissal), or was squeezed in between 3:30 and 4:00 p.m. to avoid sharing the ride with the last of the school-age riders and the beginnings of the peak hour ridership. With no bus trip activity at night, available trip time to desired leisure and social activities was narrowed to approximately six daylight hours. This seemed to allow much time for activities, requiring vehicular trips. However, walking to and from bus stops, waiting at transfer points, and transferring one or more times to reach a destination devoured available time. The six hours was cut to four or five hours if destinations were widely separated and waiting time was lenghty. More importantly, if events designed specifically for elderly people were scheduled without considering the constraints mentioned above, participation in the event may have been foreclosed unless other transportation modes were used.

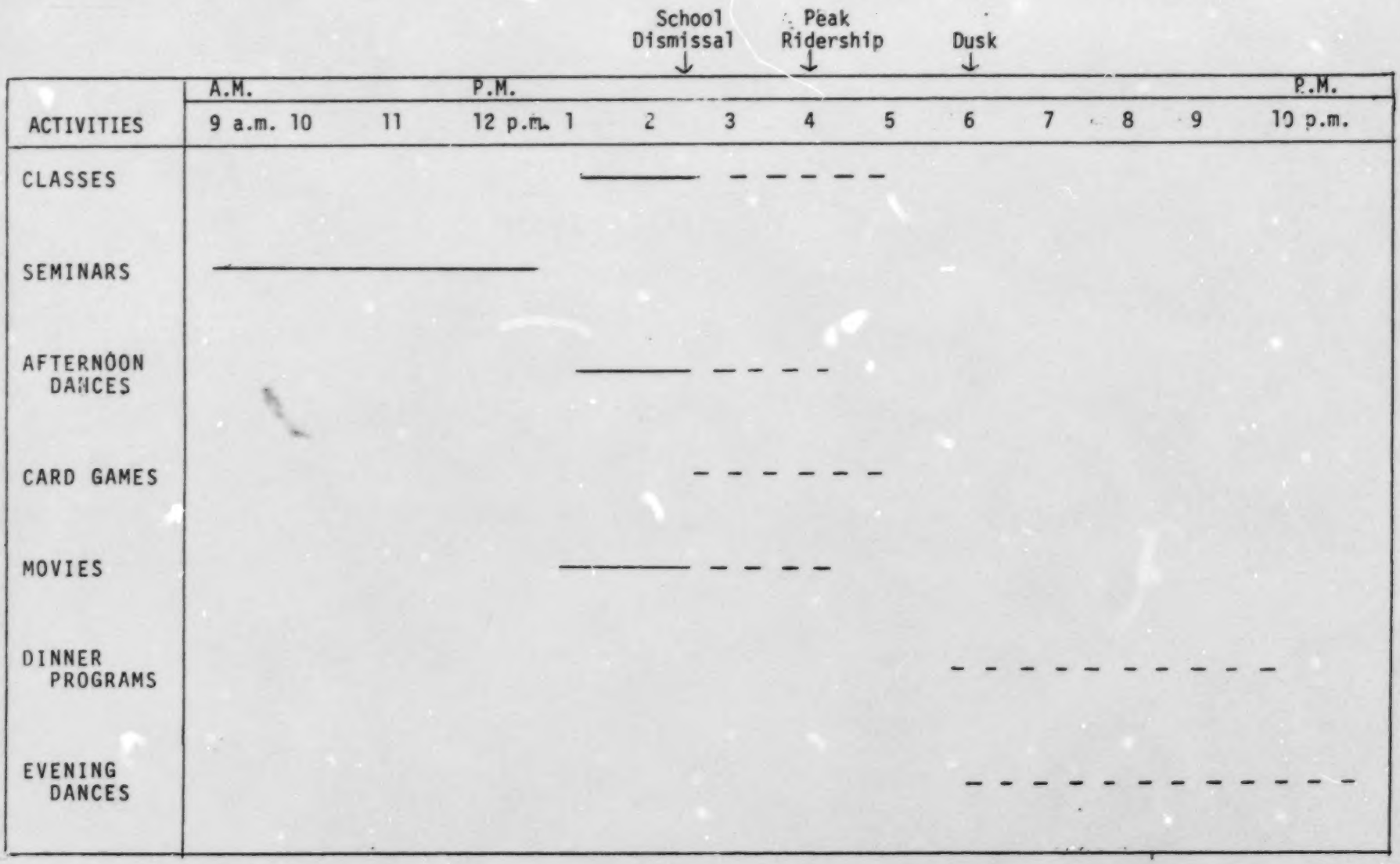
How, then, does this constricted space-time pattern affect the use of services and facilities designed specifically for the elderly? Participation in active and socially valued leisure pursuits help move the elderly

from a position of social marginality and self-isolation to social productivity, both in the perception of the individual and in socially-defined terms. Also, the elderly individual participating in educational activities or in activities which develop skills and talents legitimizes his/her leisure time use (Miller).

To focus on necessary conditions for access to leisure activities, this study spotlighted two programs, the Senior Center and the Retired Senior Volunteer Program (RSVP). The Boulder Senior Center has a membership of approximately 6,000 from a county-wide area. The Center offers regularly scheduled educational and instructional classes and seminars and "drop-in" activities such as card games, afternoon movies, and evening dances. A member also may participate in the daily lunch program, special events and periodically scheduled day-long bus trips to sites and events in the Boulder-Denver area. The Center is located adjacent to a major bus route with buses stopping every thirty minutes, day and night. Scheduled hours for the Center are 9:00 a.m. to 5:00 p.m. weekdays, 9:00 a.m. to 4:00 p.m. Saturdays and closed on Sundays. Therefore, necessary conditions seem to exist for members' participation in the various Center offerings.

Application of time-geography uncovers significant constraints that are caused by meshing the various schedules involved (the elderly non-driver's 8:00 a.m. to 2:30 p.m. trip constraints, the Senior Center's schedule and the RTD bus schedules). These constraints faced by the elderly non-driver significantly reduced access to many types of events offered. As Figure 1 indicates, many of the "drop-in" activities and classes occur after 2:00 p.m. Attendance at these events by elderly non-drivers means an unpleasant bus trip home during rush hour ridership or, for the evening

FIGURE 1. BOULDER SENIOR CENTER IN-HOUSE ACTIVITIES WEEKDAYS AND WEEK NIGHTS



programs, a round-trip home on the bus at night. Many of the weekday chartered bus tours scheduled by the Center return to the Center after closing times, yet before the afternoon rush-hour ridership ceases, leaving the elderly participant faced with a long wait for less crowded buses. In the case of Saturday and Sunday tours, the Center is closed, dusk has fallen, and the RTD buses are not running when the tour bus returns to the Center. Thus, for many of the chartered excursions, the non-driver's perception of the constraints outweigh the desire for the activity (Figure 2).

In sum, of the approixmately 360 classes, special events, information seminars, dinner programs, drop-in activities and bus excursions scheduled by the Center during a two-month period, coupling, capability, and authority constraints eliminate almost two-thirds of the selections from the elderly non-driver's agenda.

In Boulder, the Retired Senior Volunteer Program places approximately 800 elderly volunteers in over 100 agencies and non-profit organizations each year (Wessel). Although many of the volunteers provide their own transportation, a large percentage rely on RTD for transportation (Pettigrew). Auto drivers are reimbursed the cost of driving seven miles per day. With the increase in gasoline costs, this practice may be curtailed by RSVP, and many seniors currently driving may opt to ride the bus round-trip to volunteer locations because of economic necessity.

Table 1 lists a cross-section of fifteen RSVP agencies in each city and the time and effort involved for each of the five non-driver's trips to all of these fifteen locations in their respective cities. The average round-trip time including walking time to and from the bus is 83 minutes in Boulder and 90 minutes in Denver with many trips involving transfers. None

FIGURE 2. WEEKDAY AND WEEKEND BUS EXCURSIONS

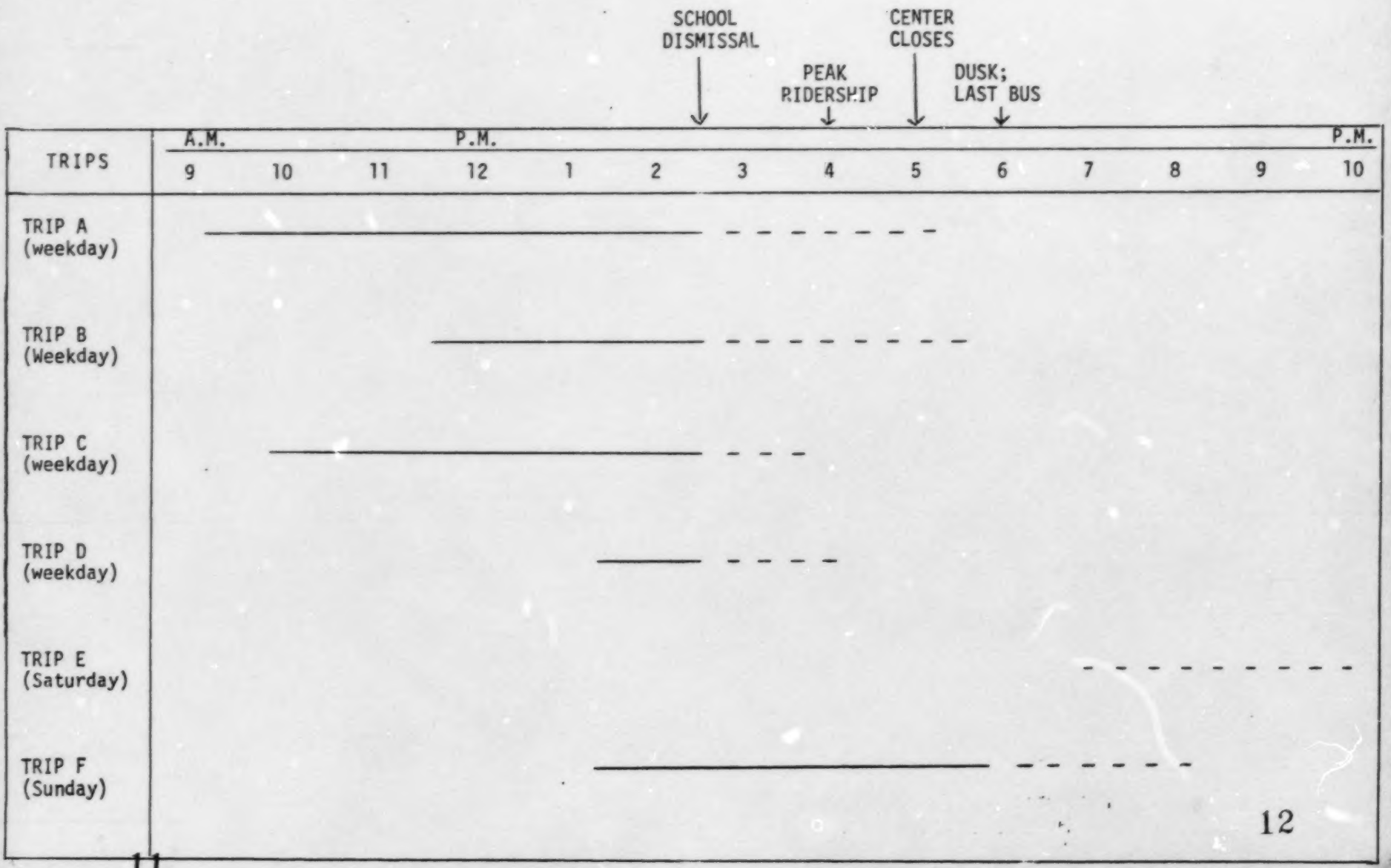


Table III. Time Effort Involved in Reaching Volunteer Agencies

Agency Locations In Boulder and Denver	Mrs. C		Mrs. K		Mrs. B		Mrs. G		Mrs. H	
	RT[1]	T[2]	RT	T	RT	T	RT	T	RT	T
People's Clinic	52	1	20	0	68	0	-	-	-	-
San Juan Recreation Center	50	2	20	0	50	2	-	-	-	-
University of Colorado	14	0	54	2	14	0	-	-	-	-
YMCA	58	2	60	2	50	0	-	-	-	-
YWCA	38	2	66	2	40	2	-	-	-	-
Boulder Leagal Services	32	0	56	0	56	0	-	-	-	-
NOAA	98	2	32	0	40	0	-	-	-	-
Burbank Junior High School	46	2	46	2	20	0	-	-	-	-
Boulder District Courts	50	2	50	2	74	2	-	-	-	-
Boy's Club of Boulder	64	2	58	2	70	2	-	-	-	-
Carmel, Ltd.	60	2	110	2	48	0	-	-	-	-
Center for People W/Disabilities	76	2	30	0	100	2	-	-	-	-
Boulder Manor Nursing Home	40	0	44	0	40	0	-	-	-	-
Lincoln Elementary School	40	2	36	0	40	0	-	-	-	-
New Horizons Pre-School	52	2	90	2	128	2	-	-	-	-
Lost Arts	-	-	-	-	-	-	70	2	-	-
Platt Park Recreational Center	-	-	-	-	-	-	80	2	-	-
Right to Read Program	-	-	-	-	-	-	30	2	-	-
University of Colorado (Denver)	-	-	-	-	-	-	100	2	-	-
Veteran's Hospital	-	-	-	-	-	-	120	2	-	-
Wise Old Owl	-	-	-	-	-	-	50	2	-	-
YMCA (Denver)	-	-	-	-	-	-	160	2	-	-
Adult Education Tutorial Program	-	-	-	-	-	-	20	0	-	-
American Cancer Society	-	-	-	-	-	-	60	2	-	-
Beth Israel Hospital	-	-	-	-	-	-	65	0	-	-
Bonfils Memorial Blood Bank	-	-	-	-	-	-	40	2	-	-
Botanic Gardens	-	-	-	-	-	-	50	2	-	-
Children's Museum	-	-	-	-	-	-	80	2	-	-
Denver Art Museum	-	-	-	-	-	-	80	2	-	-
Denver Public Library	-	-	-	-	-	-	44	2	-	-

(1) Round trip time in minutes

(2) Number of transfers, round trip

of these agencies are more than thirty minutes, round-trip by auto from each participant's home. The additional time and energy involved in bus travel represents time and energy that the volunteer can give to the agency. Three of the five women did not volunteer time to community organizations, citing the inconvenient, tiring bus trip as a major reason.

If elderly individuals time-space reaches are narrowed by an inflexible transit system, it is likely that most elderly volunteers will choose volunteer locations requiring short bus rides. However, such choices may contradict the volunteer's desire to match skills more closely with agency needs. If most of the volunteers used are elderly non-drivers, the agency may need to rearrange its activities, taking better advantage of the offered skills and energy.

This study elucidated a particular set of relationships and linkages between the elderly participant and her lifespace. Time budget analysis showed that the elderly participants had large time blocks available for discretionary activities. However, tracing the existing linkages between the individual and her environment disclosed constraints which reduced the availability of seemingly wide activity choice ranges and alternatives to these retired people and to others in similar circumstances. These non-drivers lacked flexibility in scheduling their leisure time partially because of the constraints of the aging process and partially because of the need to rely on an inflexible transportation system. Capability, coupling, and authority constraints suggest a strong relationship between human patterns revealed in this study and mass transit system patterns. Understanding of such relationships is crucial if researchers are to focus not only on time that is available for free time activities but on the arrangement of that time.

Lack of a flexible travel mode isolates the healthy and physically mobile older person as completely as if he/she were physically incapacitated For the elderly, availability is not synonymous with accessibility. Many older people do not use facilities and services available because they are not able to reach them within a preferred time period, if at all. Because of accessibility constraints, elderly people frequently lack ability to congregate and share information with other elderly people. Lack of information exchange, formal and informal, prevents the elderly from knowing of their share of goods and services offered. For elderly people having many social ties with relatives and other groups, restrictions in senior center use are not crucial. If, however, socialization takes place primarily at the senior center, reduction in use of its facilities may contribute to the less mobile person's social isolation (Cummings and Henry).

The matching of the elderly's resources and organizations', such as RSVP, societal needs is particularly important because these organizations need the skills provided by older citizens. Urban communities cannot afford to ignore these valuable human assets representing lifetimes of experience. Volunteer positions that housewives traditionally fill are left vacant when the housewives join the work force. Many agencies are faced with paid staff reductions. Sometimes, dedicated older people with appropriate skills can fill vacant staff positions in these understaffed agencies. If accessibility constraints prevent a match between a volunteer's skills and an agency's needs, many services required by the urban community may be lost.

For the elderly participants of thisstudy, accumulated experience of societally-imposed constraints intensified the perception of very real

constraints. These individuals have accumulated many years of recognizing and adjusting to society's matched and mis-matched choreography. Acceleration of physical deterioration increases the awareness of changes in physical capability. This awareness overwhelmingly dominates reactions to authority and coupling constraints. Each of the interviewees identified her own set of capability constraints and charted her daily activities to accommodate those constraints. Recognition of authority and coupling constraints was keyed to recognition of her own physical limitations and the control she had over her own decision-making process. Daily decisions to travel or not to travel and at what distances overwhelmingly controlled the planning of daily activities. To younger people the decision to travel and travel mode choice seems secondary to planning the event itself. For these elderly women, the decision to travel at all became paramount over the event. Thus, for this elderly generation, matching schedules with an inflexible transit system may seem too extreme to undertake the journey. Lack of viable transportation for any age group constricts lifespace. For the elderly, in particular, lack of flexible transportation limits capacity for self-maintenance and restricts activities and social contacts. Consequently, loss of viable transportation may contribute to disengagement or alienation from society and may aggravate the experience of anomie (Carp).

The significance of this type of study goes beyond identification of reasons for the mismatched schedules of RTD, the Senior Center, and the elderly patrons to suggestions for possible alternative views for social planning as related to the elderly. Identifying this population group's accessibility constraints can facilitate social, transit, and land use planners' efforts in creating flexible alternatives for providing services and amenities for the elderly.

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